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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Guido Nykiel

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EXAMINER

KEMMERLE III, RUSSELL J

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/534,009	Applicant(s) NYKIEL ET AL.	
	Examiner RUSSELL J. KEMMERLE III	Art Unit 1791	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 07 July 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5,7-10,12-14 and 16-23 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-5,7-10,12-14 and 16-23 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 07 July 2008 has been entered.

Claim Rejections - 35 USC § 103

Claims 1-4, 7-10, 12, 14 and 16-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Kraglund (WO 97/22563) in view of Bronshtein (US Patent 4,617,045).

Referring to claims 1-3, 9, 10, 16, 17 19 and 20 Kraglund teaches a method of creating briquettes to be used as a charge to be melted and formed into fibers. Specifically, the briquettes are to be formed from a mixture of alumina sand which had been used in foundry processes with other inorganic industrial waste material (page 6 lines 16-25). Kraglund specifically discloses creating a briquette of 52 wt% industrial residue (35 wt% wool waste, 12 wt% LD converter slag and 5 wt% power plant bottom ash) and 35 wt% foundry sand (i.e., correction material; 30 wt% bauxite foundry sand and 5 wt% olivine foundry sand) (page 9, example 1). The briquettes are generally

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made by use of a binder and compression of the materials to form the briquette (page 8, lines 11-14). An example of the amount of cement binder used is given as 13 wt% (page 9 example 1). Kraglund also discloses that the mixture used to make the bricks can include power plant ash or wood ash (i.e., combustion residues) as any amount of the industrial waste, depending on the desired final composition (page 6 lines 16-25), specifically giving an example of 5 wt% combustion residue (power plant bottom ash) (page 9 example 1).

While Kraglund does not specifically disclose the grain size of the correction material, Kraglund does disclose that the minimum dimension of the final product may be as small as 5mm (page 8 lines 22-26). This would inherently require that all materials used to create such a final product have a particle size of less than 20mm. Since the grain must be contained in one particle, it would have to be less than the particle size of 20mm, and it would have been within the skill of one of ordinary skill in the art to optimize such a value and use materials with a grain size of 3-7mm.

Kraglund does not disclose that the industrial waste or correction material is reduced in size before being formed into the briquette.

Bronshtein teaches a method of forming waste products into a briquette, which is then melted and converted into fibers (abstract). Bronshtein discloses that larger pieces of waste used to make the briquettes should be reduced in size (Col 3 line 10) and that as the particle size is reduced less binder is needed to form the briquettes (Col 5 lines 31-35). Specifically Bronshtein discloses using combustion residue (shot) that has been ground to a particle size of less than 50 μ m (0.05 mm) (Col 5 lines 31-34). While

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Bronshtein that the particle size of the ground residue is less than 50 μ m, it does not disclose what the grain size of the material is. However, since the grain must be contained in one particle, it would have to be less than the particle size of 50 μ m.

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to have combined the fiber making method as taught by Kraglund with the teaching of Bronshtein to reduce the particle size of the materials before pressing them into a briquette, and further using combustion residue of less than 50 μ m, since Bronshtein teaches that by reducing the particle size less binder is needed, which could make the process cheaper or provide better control over the composition of the briquette.

Referring to claims 4 and 14, Kraglund in view of Bronshtein is relied upon as discussed above. Kraglund further discloses that the briquettes formed as discussed above are placed into the furnace to be melted with extrusive rocks, specifically with diabase (page 9, example 1).

Referring to claim 7, Kraglund in view of Bronshtein is relied upon as discussed above. Kraglund further discloses a fiber composition substantially the same as that recited in claim 7 of the instant application (claim 4).

It would have been obvious to one of ordinary skill in the art, at the time of invention by applicant, to have used a combustion residue in the process of making a briquette as taught by Kraglund, and to have used a combustion residue with a composition similar to that of the final fiber as taught by Kraglund. This would have been obvious to one of ordinary skill in the art since using materials with compositions

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similar to the desired final composition would reduce the amount of other materials that would have to be added in order to reach the desired composition.

Referring to claim 8, Kraglund in view of Bronshtein is relied upon as discussed above. Kraglund further discloses that the binder used to mold the briquettes is a cement binder (page 8 lines 14-15).

Referring to claim 12, Kraglund in view of Bronshtein is relied upon as discussed above. Kraglund further discloses that the fiber has a high alumina content to increase biological solubility (page 1 lines 2-7).

Referring to claim 18, Kraglund in view of Bronshtein is relied upon as discussed above. Kraglund does not disclose the addition of hematite or magnetite to the mixture to be turned into the briquette, however Kraglund does teach the briquette contain iron oxide as discussed above. Since haematite and magnetite are both forms of iron oxide, it would have been obvious to one of ordinary skill in the art at the time of invention by applicant to have added haematite or magnetite as a way to get the iron oxide content up to the levels taught by Kraglund.

Referring to claim 21, Kraglund also discloses that the mixture used to make the bricks can include wood ash (i.e., combustion residue of wood chips) (page 6 lines 16-25).

Referring to claim 22, Kraglund further discloses the non-briquette charge, that is, the material feed in to the melt with the briquettes, can include basalt or diabase (page 7 lines 7-16).

Referring to claim 23, while neither Kraglund nor Bronshtein specifically disclose the density of the melt being formed, since it is found that they render obvious the method of forming a melt of the current invention, that is considered evidence that the melt resulting from that process would have the same or very similar properties as the current invention, specifically a density of 1.4-1.9 kg/dm³.

Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kraglund in view of Faulmann (US Patent 6,402,801).

Kraglund is relied upon as discussed above, but fails to teach that the combustion residue is produced by fluidized-bed combustion.

Faulmann discloses that fluidized bed combustion residue contains calcium oxide (CaO) (Col 2 lines 5-6).

It would have been obvious to one of ordinary skill in that art, at the time of invention by applicant, to have modified the method of forming briquettes for fiber making as taught by Kraglund, by using fluidized bed combustion residue which as taught by Faulmann contains CaO. This would have been obvious to one of ordinary skill in the art since CaO is taught by Kraglund as a component of the briquette, and waste from fluidized bed combustion would be readily available and affordable and a good source of CaO.

Claim 13 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kraglund in view of Klein (US Patent 6,565,645).

Kraglund is relied upon as discussed above, but fails to teach that the combustion residue contain components from flue gas desulphurization.

Klein discloses that a large amount of gypsum (calcium sulfate) comes from flue gas desulfurization (Col 4 lines 27-33).

It would have been obvious to one of ordinary skill in that art, at the time of invention by applicant, to have modified the method of forming briquettes for fiber making as taught by Kraglund, by using gypsum which is readily available from flue gas desulfurization as taught by Klein. This would have been obvious to one of ordinary skill in the art since gypsum is a well known source of one of the materials listed in the composition recited in claim 4 of Kraglund (CaO), and as waste from flue gas desulfurization would be readily available and affordable.

Response to Arguments

Applicant's arguments filed 15 October 2007 have been fully considered but they are not persuasive.

Applicant appears to argue that Kraglund does not disclose correction materials having a grain size of 0 to 20 mm. Applicant argues that the grain size of the material used for the production of a mineral melt is not dependent on the dimension of the final product, and goes on to discuss the advantages of a small grain size.

This is not found to be persuasive because Kraglund does appear to use or suggest correction materials which have a grain size of less than 20 mm. The correction materials are used in combination with the industrial residue and a binder, and all those materials are then mixed and compressed to make a briquette that can be as small as 5mm (page 8 lines 22-23, and as discussed above in the rejection). Thus, depending on the amount of compression experienced by the briquettes, that starting

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materials shaped into a precompacted body would have to collectively be somewhat larger than 5 mm to form such a briquette. This would obviously require the materials making up the briquettes (correction, industrial residue and binder) to have a total size smaller than the precompacted body, and since the grain size must be smaller than the total size, appears to result in Kraglund including embodiments where the correction material has a grain size of less than 20 mm.

Applicant further argues that Kraglund fails to recognize the reason for employing the claimed grain size in the processing, specifically to ensure even distribution of materials. This is not found to be persuasive since it is not necessary that the prior art recognize the same advantages realized by the Applicant, and the prior art may have entirely different reasons for using such limitations. However, as discussed above and in the previous Office actions, it does appear that Kraglund discloses using correction materials with a grain size of less than 20 mm, and that is enough to meet this limitation of the claims.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to RUSSELL J. KEMMERLE III whose telephone number is (571)272-6509. The examiner can normally be reached on Monday through Thursday, 7:00-5:00 EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on 571-272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Steven P. Griffin/
Supervisory Patent Examiner, Art
Unit 1791
